REMARKS

By this Amendment, claims 1, 8, 12 and 24 are amended. Claims 1-5, 8-13 and 15-29 are pending in the application. Claims 2-4, 12, 13, 15-17 and 20-23 have been withdrawn from consideration. Reconsideration of the May 18, 2004 Office Action is respectfully requested.

Rejection Under 35 U.S.C. § 112

Claims 1, 5-11, 18, 19 and 24 have been rejected under 35 U.S.C. § 112, second paragraph, for reasons stated at page 4 of the Office Action.

Claims 1 and 24 are amended to change "fuel/gas mixture or reaction mixture," "reaction mixture" and "gaseous reaction mixture" to "gas stream with injected fuel" for clarification purposes.

Withdrawal of the rejection is respectfully requested.

First Rejection Under 35 U.S.C. § 103

Claims 1, 5, 9-11, 18, 19 and 24-29 are rejected under 35 U.S.C. § 103(a) over U.S. Patent No. 5,026,273 to Cornelison in view of U.S. Patent No. 5,591,413 to Toyoda. The reasons for the rejection are stated on pages 4-7 of the Office Action. The rejection is respectfully traversed.

Claim 1, as amended, is directed to a catalytically operating burner mounted in a gas turbine system. The claimed burner comprises, *inter alia*, "a catalyzer structure ... through which the gas stream with injected fuel can flow, whereby a catalyst that initiates a combustion reaction of the gas stream with injected fuel is provided inside the catalyzer structure, the catalyzer structure is divided into (i) an

inlet zone including an inlet end of the catalyzer structure and which is catalytically inactive or inert, (ii) an outlet zone including an outlet end of the catalyzer structure and which is catalytically inactive or inert, and (iii) an intermediate zone which is catalytically active and located between the inlet zone and the outlet zone along a flow direction; ... a heat-resistant carrier material that extends continuously from the inlet end to the outlet end of the catalyzer structure and that forms the walls of several adjoining channels that pervade the catalyzer structure in a longitudinal direction and permit the gas stream with injected fuel to flow through the catalyzer structure; the walls being coated with the catalyst in such a way that at least some of the channels have at least one catalytically active zone and at least two catalytically inactive or inert zones in the flow direction; communicating openings being constructed in the walls, through which the adjoining channels communicate with each other" (emphasis added). Support for the amendments to claim 1 is provided, for example, in FIGs. 4 and 5, which show embodiments of the catalyzer 4 including a carrier material 10 that extends from an inlet end to an outlet end of the catalyzer, as indicated by arrow 15, which represents the flow direction through the catalyzer.

In other words, the burner recited in claim 1 comprises a catalyzer structure including a common carrier material that extends continuously from the inlet end to the outlet end of the catalyzer structure and that forms the walls of adjoining channels that pervade the catalyzer structure in the longitudinal direction. The walls formed by the carrier material are coated with the catalyst such that the channels have at least one catalytically active zone and at least two catalytically inactive zones in the flow direction. The walls have communicating openings through which

the adjoining channels communicate with each other. The applied references fail to suggest the claimed burner.

Cornelison discloses a combuster including a catalyst zone 40. As shown in Figure 3 of Cornelison, the catalyst zone 40 includes mesh sections 60, 62. The mesh sections 60, 62 each include a plurality of layers, e.g., layers 64, 66 and 68. At column 10, lines 21-27, Cornelison discloses that:

> When herringbone corrugated mesh layers, e.g., layers 64, 66 and 68 are disposed as shown, the hot gases from combustion zone 38 flow through the catalytic zone 40 between the layers, if blinded, and through and around the meshes (e.g., meshes 50 in FIG. 4) if open, following a tortuous path created by the chevron pattern of the corrugations. (Emphasis added).

Accordingly, Cornelison discloses that the meshes can be open, i.e., not "blinded." Cornelison does not disclose or suggest that the open meshes form adjoining channels that pervade a catalyzer structure in a longitudinal direction and permit a gas stream with injected fuel to flow through the catalyzer structure.

The Office Action also refers to FIG. 5 of Cornelison, which shows a corrugated screen with a refractory metal oxide coating 54, which blinds or fills the meshes 50 (column 10, lines 42-47). Cornelison discloses that "blinding of the screen is not necessary and the meshes 50 may be partially open" (column 10, 47-48). However, Cornelison does not disclose or suggest that such meshes form adjoining channels that pervade a catalyzer structure in a longitudinal direction and permit a gas stream with injected fuel to flow through the catalyzer structure, or that the meshes include "communicating openings being constructed in the walls, through which the adjoining channels communicate with each other."

Toyoda fails to cure the deficiencies of Cornelison with respect to the burner of claim 1. Particularly, Toyoda discloses a metal carrier for a catalytic converter.

As shown in FIG. 2A of Toyoda, the metal carrier 10 includes two second honeycomb structures 12 and a first honeycomb structure 11 arranged between the second honeycomb structures 12. According to Toyoda, the first honeycomb structure 11 and the two second honeycomb structures 12 are spatially separated from each other along the metal carrier. Particularly, at column 4, lines 15-21, Toyoda emphasizes that:

> Fixed gaps must be provided between the two end portions 11a, 11b of the first honeycomb structure 11 and the two end portions 12a, 12b of the second honeycomb structures 12, and by means of these gaps, a degree of freedom is provided for expansion in the axial direction of the first honeycomb structure 11, and stress due to thermal strain is eased. (Emphasis added).

Clearly, Toyoda does not disclose that the metal carrier includes "a heat-resistant carrier material that extends continuously from the inlet end to the outlet end of the catalyzer structure." Rather, according to Toyoda, the first honeycomb structure 11 must be spatially separated from both of the second honeycomb structures 12. Thus, Toyoda teaches away from a common carrier material that forms the walls of channels of all three of the (upstream) second honeycomb structure 12, the first honeycomb structure 11 and the (downstream) second honeycomb structure 12. As explained at MPEP § 2145(X)(D)(2), page 2100-162 (May 2004 Rev.), "[i]t is improper to combine references where the references teach away from their combination. *In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)."

Moreover, Toyoda does not suggest that the metal carrier comprises "communicating openings being constructed in the walls, through which the adjoining channels communicate with each other," as recited in claim 1.

For at least the foregoing reasons, Toyoda fails to provide the required motivation to modify Cornelison's combuster to result in a burner that includes every feature recited in claim 1, including a catalyzer structure that is "divided into (i) an inlet zone ... which is catalytically inactive or inert, (ii) an outlet zone ... which is catalytically inactive or inert, and (iii) an intermediate zone which is catalytically active and located between the inlet zone and the outlet zone along a flow direction," and "a heat-resistant carrier material that extends continuously from the inlet end to the outlet end of the catalyzer structure and that forms the walls of several adjoining channels that pervade the catalyzer structure in a longitudinal direction and permit the gas stream with injected fuel to flow through the catalyzer structure; the walls being coated with the catalyst in such a way that at least some of the channels have at least one catalytically active zone and at least two catalytically inactive or inert zones in the flow direction; communicating openings being constructed in the walls, through which the adjoining channels communicate with each other" (emphasis added).

Furthermore, because neither Cornelison nor Toyoda suggests features that are recited in claim 1, even if the teachings of these references were combined despite there being no motivation for doing so, the combined teachings still would not result in the claimed burner.

Therefore, Applicants submit that the applied references fail to support any *prima facie* case of obviousness with respect to the subject matter of claim 1.

Dependent claims 5, 9-11, 18, 19 and 25-27 also are patentable over the applied references.

Independent claim 24, as amended, recites a process of using a catalyzer structure, which comprises, *inter alia*, "providing a catalyzer structure which is divided into (i) an inlet zone including an inlet end... which is catalytically inactive or inert, (ii) an outlet zone including an outlet end... which is catalytically inactive or inert, and (iii) an intermediate zone which is catalytically active and located between the inlet zone and the outlet zone along a flow direction, the catalyzer structure including a heat-resistant carrier material that extends continuously from the inlet end to the outlet end of the catalyzer structure and that forms the walls of several adjoining channels that pervade the catalyzer structure in the longitudinal direction of the catalyzer structure and enable a gas stream with injected fuel to flow through the catalyzer structure, wherein the walls are coated with a catalyst in such a way that at least some of the channels have at least one catalytically active zone and at least two catalytically inactive or inert zones in the flow direction and wherein between the inlet end and the outlet end of the catalyzer structure communicating openings are constructed in the walls, through which the adjoining channels are communicating with each other, in a catalytically operating burner" (emphasis added). For reasons discussed above, Cornelison and Toyoda fail to suggest at least providing the catalyst structure recited in claim 24, and thus would not have rendered obvious the claimed method.

Dependent claims 28 and 29 also are patentable over the applied references.

Therefore, withdrawal of the rejection is respectfully requested.

Second Rejection Under 35 U.S.C. § 103

Claims 6-8 are rejected under 35 U.S.C. 103(a) over Cornelison in view of Toyoda, and further in view of U.S. Patent No. 5,248,251 to Dalla Betta et al. ("Dalla Betta") and U.S. Patent No. 5,512,250 to Betta et al. ("Betta"). The reasons for the rejection are stated on pages 7-8 of the Office Action. The rejection is respectfully traversed.

It is admitted in the Office Action that Cornelison and Toyoda fail to suggest the features recited in claims 6-8, which depend from claim 1. However, Applicants submit that Dalla Betta and Betta also fail to cure the above-described deficiencies of Cornelison and Toyoda with respect to the burner recited in claim 1.

For example, Dalla Betta discloses a graded catalyst in which the highest degree of catalytic activity is at the inlet of the structure. In contrast, claim 1 recites that "the catalyzer structure is divided into (i) an inlet zone including an inlet end of the catalyzer structure and which is catalytically inactive or inert, (ii) an outlet zone including an outlet end of the catalyzer structure and which is catalytically inactive or inert, and (iii) an intermediate zone which is catalytically active and located between the inlet zone and the outlet zone along a flow direction" (emphasis added). Accordingly, Dalla Betta not only fails to suggest, but teaches away from the catalyzer structure, as recited in claim 1.

Betta discloses a catalyst structure. Betta also fails to provide any motivation or suggestion to modify Cornelison's combuster to result in the burner recited in claim 1. Thus, claims 6 and 8 would not have been rendered obvious by the applied references.

Therefore, withdrawal of the rejection is respectfully requested.

Conclusion

For the foregoing reasons, allowance of the application is respectfully requested. Should the Examiner have any questions concerning this response, the undersigned can be reached at the telephone number given below.

Respectfully submitted,

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